

# 1 VQE results Aer Estimator (With Shots)

			(Full Hamiltonian)	Harmonic Oscillator	$\Lambda = 32$	COYBLA Max 10k Iterations					
Ansatz	Tolerance	Shots	Converged runs	Mean iter	VQE min E.	$\sigma_{min}$	$\Delta_{min}$	VQE median E.	$\Delta_{median}$	Exact	Time
RA r1 rl	1e-01	10000	100/100	104	6.06e-02	3.883e-03	6.06e-02	3.746e-01	3.746e-01	0e+00	00h 09m 36s
RA r1 rl	1e-02	10000	100/100	138	1.11e-02	2.2751e-03	1.11e-02	2.2985e-01	2.2985e-01	-	00h 29m 32s
RA r1 rl	1e-03	10000	100/100	160	2.36e-02	4.7404e-03	2.36e-02	2.017e-01	2.017e-01	-	00h 31m 24s
RA r1 rl	1e-04	10000	100/100	181	1.21e-02	2.6709e-03	1.21e-02	2.794e-01	2.794e-01	-	00h 29m 29s
RA r1 rl	1e-05	10000	100/100	207	2e-02	3.4127e-03	2e-02	3.4695e-01	3.4695e-01	-	00h 32m 52s
RA r1 rl	1e-06	10000	100/100	219	7.1e-03	1.991e-03	7.1e-03	3.357e-01	3.357e-01	-	00h 35m 05s
RA r1 rl	1e-07	10000	100/100	239	2.53e-02	4.6524e-03	2.53e-02	2.768e-01	2.768e-01	-	00h 37m 57s
RA r1 rl	1e-08	10000	100/100	262	1.36e-02	3.1608e-03	1.36e-02	2.699e-01	2.699e-01	-	00h 41m 40s
Ansatz	Tolerance	Shots	Converged runs	Mean iter	VQE min E.	$\sigma_{min}$	$\Delta_{min}$	VQE median E.	$\Delta_{median}$	Exact	Time

Table 1